## In the Claims

Claims 1 - 120 (Cancelled)

121. (Currently Amended) A method for producing a plasma display substrate comprising a base substrate having a plurality of display electrodes and a plurality of barrier ribs formed on a surface of the base substrate with a selected pitch, and phosphor layers formed over the display electrodes and in spaces between the barrier ribs, comprising:

(a) preparing

(a-1) a table mounted with the base substrate on an upper surface thereof,

(a-2) a paste applicator having a nozzle which includes (i) a flat plate having a flat surface provided with 150 to 2000 outlet holes for discharging a phosphor paste for emitting light of one color selected from the group consisting of red, green ~~or~~ and blue to form the phosphor layers and (ii) a manifold in which the phosphor paste is stored and which supplies the phosphor paste to the outlet holes, wherein the outlet holes have an average diameter of 10 to 500 $\mu$m, the outlet holes are formed with a pitch of 0.12 to 3 mm, and a lower surface of the flat plate is arranged to be located above and faces the upper surface of the table, and

(a-3) a moving device to move the table and the paste applicator relative to each other,

(b) moving the table and the paste applicator relative to each other with the moving device in a one time relative movement along the lengthwise direction of the barrier ribs,

(c) discharging the phosphor paste continuously from the manifold through the outlet holes, and

(d) applying the phosphor paste discharged from the outlet holes into all of the spaces to be coated with the phosphor paste for emitting light of the selected color between ~~substantially~~

~~all of~~ the barrier ribs to form the phosphor layers therein during the one time relative movement.

122. (Previously presented) The method according to claim 121, wherein each space (S) between the adjacent barrier ribs and an average diameter (D) of the outlet holes satisfy the following formula:

$$10\ \mu m \leqq D \leqq S \leqq 500\ \mu m.$$

123. (Previously presented) The method according to claim 121, wherein a pitch of the outlet holes is 3m times of the pitch of the barrier ribs, where m is an integer of 1 to 10.

124. (Previously presented) The method according to claim 121, wherein each of the outlet holes satisfies the following formula:

$$L/D = 0.1 - 600$$

where L is the length of the outlet holes and D is the average diameter of the outlet holes.

125. (Previously presented) The method according to claim 121, wherein the average diameter of the outlet holes is in the range of 60 to 400 $\mu$m.

126. (Previously presented) The method according to claim 121, wherein the average diameter of the outlet holes is less than each space between the adjacent barrier ribs.

127. (Previously presented) The method according to claim 121, wherein the distance between top ends of the barrier ribs and a surface of the flat plate is kept at 0.05 to 0.5 mm.

128. (Previously presented) The method according to claim 121, wherein the manifold is connected to a negative pressure source and produces a negative internal pressure in the manifold to stop discharging of the phosphor paste.

129. (Previously presented) The method according to claim 121, wherein after starting of the relative movement, discharging of the phosphor paste is started, and before stopping of the relative movement, discharging of the phosphor paste is stopped.

130. (Previously presented) The method according to claim 121, further comprising drying the phosphor layers with heat.

131. (Previously presented) The method according to claim 121, wherein the phosphor paste stored in the manifold has a viscosity of 2 to 50 Pa•s.

132. (Previously presented) The method according to claim 121, wherein the barrier ribs have a pitch of 100 to 250 $\mu$m between adjacent barrier ribs, a width of 15 to 40 $\mu$m in each of the barrier ribs, and a height of 60 to 170 $\mu$m in each of the barrier ribs.

133. (Previously presented) The method according to claim 121, wherein top ends of the barrier ribs are black.

134. – 137 (Cancelled)

138. (Currently Amended) A method for producing a plasma display substrate comprising a base substrate having a plurality of display electrodes and a plurality of barrier ribs formed on a surface of the base substrate with a selected pitch, and phosphor layers formed over the display electrodes and in spaces between the barrier ribs, comprising:

(a) preparing

(a-1) a table mounted with the base substrate on an upper surface thereof,

(a-2) a paste applicator comprising a first nozzle, a second nozzle and a third nozzle, wherein

(a-2-1) the first nozzle includes (i) a first flat plate having a flat surface provided with a first set of 150 to 2000 outlet holes for discharging a first phosphor paste for emitting light of red to form the phosphor layers and (ii) a first

manifold in which the first phosphor paste is stored and which supplies the first phosphor paste to the first set of outlet holes, wherein the first set of outlet holes have an average diameter of 10 to 500 μm, the first set of outlet holes are formed with a pitch of 0.12 to 3 mm and the first set of outlet holes are provided along a first straight line,

(a-2-2) the second nozzle includes (i) a second flat plate having a flat surface provided with a second set of 150 to 2000 outlet holes for discharging a second phosphor paste for emitting light of green to form the phosphor layers and (ii) a second manifold in which the second phosphor paste is stored and which supplies the second phosphor paste to the second set of outlet holes, wherein the second set of outlet holes have an average diameter of 10 to 500 μm, the second set of outlet holes are formed with a pitch of 0.12 to 3 mm and the second set of outlet holes are provided along a second straight line parallel to the first straight line, and

(a-2-3) the third nozzle includes (i) a third flat plate having a flat ~~plate~~ surface provided with a third set of 150 to 2000 outlet holes for discharging a third phosphor paste for emitting light of blue to form the phosphor layers and (ii) a third manifold in which the third phosphor paste is stored and which supplies the third phosphor paste to the third set of outlet holes, wherein the third set of outlet holes have an average diameter of 10 to 500 μm, the third set of outlet holes are formed with a pitch of 0.12 to 3 mm and the third set of outlet holes are provided along a third straight line parallel to the first straight line, and

(a-2-4) wherein lower surfaces of the first, second and third flat plates are arranged to be located above and face the upper surface of the table,

(a-3) a moving device to move the table and the paste applicator relative to each other,

(b) moving the table and the paste applicator with the moving device to effect a one time relative movement of each of the three sets of the outlet holes along a lengthwise direction of the barrier ribs,

(c) discharging the phosphor paste continuously and simultaneously from the first manifold through the first set of outlet holes, from the second manifold through the second set of outlet holes and from the third manifold through the third set of outlet holes, and

(d) applying the respective phosphor pastes discharged from the respective outlet holes into the respective spaces between substantially all of the barrier ribs to form the respective phosphor layers therein during the one time relative movement.

139. (Previously presented) The method according to claim 138, wherein the shortest distance between any two of the first, second and third straight lines is 600 $\mu$m or more.

140. (Previously presented) A method for producing a plasma display comprising:

(a) producing a first substrate comprising a base substrate having a plurality of display electrodes and a plurality of barrier ribs formed on a surface of the base substrate with a selected pitch and phosphor layers formed over the display electrodes and in spaces between the barrier ribs, based on the method for producing a substrate defined in claim 121,

(b) preparing a second substrate having a plurality of address electrodes,

(c) joining the first substrate and the second substrate, and

(d) injecting a rare gas between the first substrate and the second substrate.

141. (Currently Amended) An apparatus for producing a plasma display substrate comprising a base substrate having a plurality of display electrodes and a plurality of barrier ribs formed on a surface of the base substrate with a selected pitch, and phosphor layers formed over

the display electrodes and in spaces between the barrier ribs, the apparatus comprising:

(a) a table on an upper surface of which the base substrate can be mounted,

(b) a paste applicator comprising a nozzle having a manifold provided therein to store a phosphor paste for emitting light of one color selected from the group consisting of red, green ~~or~~ and blue to form the phosphor layers and a plurality of outlet holes to discharge the phosphor paste from the manifold to all of the spaces to be coated with the phosphor paste for emitting light of the selected color between ~~substantially all of~~ the barrier ribs of the base substrate mounted on the upper surface of the table, and

(c) a moving device that moves the table and the paste applicator relative to each other in a one time relative movement,

wherein a bottom surface of the nozzle is formed with a flat plate having a flat surface, the outlet holes are formed in and through the flat plate, a number of the outlet holes formed in the flat plate is from 150 to 2000, an average diameter of the outlet holes is 10 to 500 $\mu$m, a pitch of the outlet holes is from 0.12 to 3 mm, and the bottom surface of the flat plate is located above and faces the upper surface of the table.

142. (Previously presented) The apparatus according to claim 141, wherein each of the outlet holes satisfies the following formula:

$$L/D = 0.1 - 600$$

where L is the length of the outlet hole and D is the average diameter of the outlet holes.

143. (Previously presented) The apparatus according to claim 141, wherein the average diameter of the outlet holes is in the range of 60 to 400 $\mu$m.

144. (Previously presented) The apparatus according to claim 141, wherein the bottom surface of the flat plate and/or an inner wall of each of the outlet holes is coated with a fluorine based resin.

145. (Previously presented) The apparatus according to claim 141, wherein the bottom surface of the flat plate and/or an inner wall of each of the outlet holes is coated with an amorphous carbon.

146. (Previously presented) The apparatus according to claim 141, further comprising a pressure adjuster capable of setting pressure of the phosphor paste in the manifold in a range from atmospheric pressure to a negative pressure, and a controller to control timing of change of the pressure by the pressure adjuster.

147. (Currently Amended) The apparatus according to claim 141, further comprising:

a first detector for detecting positions of the outlet holes,

a second detector for detecting positions of the barrier ribs or the spaces between the barrier ribs of the base substrate to be mounted on the upper surface of the table,

a third detector for detecting positions of the top ends of the barrier ribs of the base substrate to be mounted on the upper surface of the table,

a fourth detector for detecting ~~position~~ positions of the tips of the outlet holes, and

a controller for controlling starting and ending of discharge of the phosphor paste from the outlet holes in response to a relative position between the outlet holes and the base substrate.

148. (Previously Presented) The apparatus according to claim 141, further comprising:

a controller for keeping the tips of the outlet holes at a predetermined distance and parallel to the top ends of the barrier ribs of the base substrate to be mounted on the upper surface of the table.

149. (Previously presented) The apparatus according to claim 141, further comprising a detector for detecting the position of the phosphor paste discharged from at least one of the outlet holes onto corresponding spaces between adjacent barrier ribs of the base substrate to be mounted on the upper surface of the table.

150. (Previously presented) The apparatus according to claim 141, further comprising:

a detector for detecting the number of the barrier ribs or spaces between the barrier ribs of the base substrate to be mounted on the upper surface of the table, and

a recognizing means for recognizing spaces to be coated with the phosphor paste based on the detected number of the barrier ribs or the spaces.

151. (Previously presented) The apparatus according to claim 141, further comprising:

a reference mark detector for detecting a reference mark provided on the base substrate to be mounted on the upper surface of the table, and

a controller for controlling movement of the moving device so that the outlet holes are positioned above the spaces to be coated with the phosphor paste between the barrier ribs of the base substrate to be mounted on the upper surface of the table.

152. (Cancelled)

153. (Currently Amended) An apparatus for producing a plasma display substrate comprising a base substrate having a plurality of display electrodes and a plurality of barrier ribs formed on a surface of the base substrate with a selected pitch, and phosphor layers formed over the display electrodes and in spaces between the barrier ribs, the apparatus comprising:

(a) a table on an upper surface of which the base substrate can be mounted,

(b) a paste applicator comprising:

(b-1) a first nozzle having a first manifold provided therein to store a first phosphor paste for emitting light of red to form the phosphor layers and a first plurality of outlet holes to discharge the first phosphor paste from the first manifold to all of the spaces to be coated with the first phosphor paste for emitting red light between ~~substantially all of~~ the barrier ribs of the base substrate mounted on the upper surface of the table,

(b-2) a second nozzle having a second manifold provided therein to store a second phosphor paste for emitting light of green to form the phosphor layers and a second plurality of outlet holes to discharge the second phosphor paste from the second manifold to all of the spaces to be coated with the second phosphor paste for emitting green light between ~~substantially all of~~ the barrier ribs of the base substrate mounted on the upper surface of the table, and

(b-3) a third nozzle having a third manifold provided therein to store a third phosphor paste for emitting light of blue to form the phosphor layers and a third plurality of outlet holes to discharge the third phosphor paste from the third manifold to all of the spaces to be coated with the third phosphor paste for emitting blue light between ~~substantially all of~~ the barrier ribs of the base substrate mounted on the upper surface of the table,

(c) a moving device to move the table and the paste applicator relative to each other in a one time relative movement,

wherein the bottom surfaces of the first, second and third nozzles are formed on a flat surface of a flat plate, the outlet holes are formed in and through the flat plate, a number of the outlet holes formed in the flat plate is from 150 to 2000, an average diameter of the outlet holes is 10 to 500 $\mu$m, a pitch of the outlet holes is from 0.12 to 3 mm, and the bottom surface of the flat plate is located above and faces the upper surface of the table.

154. (Currently Amended) A method for producing plasma display substrate comprising a base substrate having a plurality of display electrodes and a plurality of barrier ribs formed on a surface of the base substrate with a selected pitch, and phosphor layers formed over the display electrodes and in spaces between the barrier ribs, comprising:

(a) preparing a paste applicator having a nozzle which includes (i) a flat plate provided

with 150 to 2000 outlet holes for discharging a phosphor paste for emitting light of one color selected from the group consisting of red, green ~~or~~ and blue to form the phosphor layers and (ii) a manifold in which the phosphor paste is stored and which supplies the phosphor paste to the outlet holes, wherein the outlet holes have a diameter of 10 to 500 $\mu$m, the outlet holes are formed with a pitch of 0.12 to 3 mm,

(b) arranging a lower surface of the flat plate to be located above and facing an upper surface of the substrate,

(c) moving the substrate and the paste applicator relative to each other in a one time [[a]] relative movement of the outlet holes along the lengthwise direction of the barrier ribs,

(d) discharging the phosphor paste continuously from the manifold through the outlet holes, and

(e) applying the phosphor paste discharged from the outlet holes into all of the spaces to be coated with the phosphor paste for emitting light of the selected color between the barrier ribs to form the phosphor layers therein during the one time relative movement.

155. (Previously Presented) A method for producing a plasma display comprising:

(a) producing a first substrate comprising a base substrate having a plurality of display electrodes and a plurality of barrier ribs formed on a surface of the base substrate with a selected pitch and phosphor layers formed over the display electrodes and in spaces between the barrier ribs, based on the method for producing a substrate defined in claim 154,

(b) preparing a second substrate having a plurality of address electrodes,

(c) joining the first substrate and the second substrate, and

(d) injecting a rare gas between the first substrate and the second substrate.

156. (Currently Amended) A method for producing a plasma display substrate comprising a base substrate having a plurality of display electrodes and a plurality of barrier ribs

formed on a surface of the base substrate with a selected pitch, and phosphor layers formed over the display electrodes and in spaces between the barrier ribs, comprising:

(a) preparing a paste applicator having a nozzle which includes (i) a flat plate provided with 150 to 2000 outlet holes for discharging [[a]] respective phosphor ~~paste~~pastes for respectively emitting ~~light~~lights of red, green and blue to form the phosphor layers and (ii) ~~a manifold~~manifolds in each of which each of the phosphor ~~paste~~pastes is stored respectively and each of which supplies the respective phosphor ~~paste~~pastes to the outlet holes, wherein the outlet holes have a diameter of 10 to 500 $\mu$m, the outlet holes are formed with a pitch of 0.12 to 3 mm,

(b) arranging a lower surface of the flat plate to be located above and facing an upper surface of the substrate,

(c) moving the substrate and the paste applicator relative to each other in a one time [[a]] relative movement of the outlet holes along the lengthwise direction of the barrier ribs,

(d) discharging the respective phosphor ~~paste~~pastes continuously from the respective ~~manifold~~manifolds through the outlet holes, and

(e) applying the respective phosphor ~~paste~~pastes discharged from the outlet holes into the spaces to be coated with the respective phosphor pastes for emitting light of the respective colors between the barrier ribs to form the phosphor layers therein during the one time relative movement.

157. (Previously Presented) A method for producing a plasma display comprising:

(a) producing a first substrate comprising a base substrate having a plurality of display electrodes and a plurality of barrier ribs formed on a surface of the base substrate with a selected pitch and phosphor layers formed over the display electrodes and in spaces between the barrier ribs, based on the method for producing a substrate defined in claim 156,

(b) preparing a second substrate having a plurality of address electrodes,

(c) joining the first substrate and the second substrate, and

(d) injecting a rare gas between the first substrate and the second substrate.

158. (Currently Amended) A method for producing a plasma display, comprising applying, in stripes between barrier ribs, a phosphor paste containing a phosphor powder and an organic compound onto a substrate having a plurality of the barrier ribs formed thereon, from ~~600~~640 to 2000 outlet holes of an average diameter of 10 μm to 500 μm, contained in a paste applicator positioned above the substrate for one of red, green or blue phosphor paste such that the paste flows downwardly from all of the holes for each color of the phosphor paste at the same time and between the barrier ribs.

159. (Currently Amended) A method for producing a plasma display, comprising coating a substrate having a plurality of adjacent barrier ribs, with three phosphor pastes respectively containing a phosphor powder emitting light of red, green or blue as stripes in spaces between said respectively adjacent barrier ribs, from ~~600~~640 to 2000 outlet holes of an average diameter of 10 to 500 μm contained in a paste applicator positioned above the substrate for one of red, green or blue phosphor paste, such that the paste flows downwardly from all of the holes for each color of the phosphor paste at the same time and between the barrier ribs, and heating to form a phosphor layer.

160. (Currently Amended) An apparatus for producing a plasma display, comprising a paste applicator for applying, in stripes between barrier ribs, a phosphor paste containing a phosphor powder emitting light of red, green or blue onto a substrate having a plurality of the barrier ribs formed thereon, wherein the paste applicator is provided above the substrate and having ~~600~~ 640 to 2000 outlet holes that face the barrier ribs of the substrate, of an average diameter of 10 to 500 μm for the red, green or blue phosphor paste and wherein a means for moving the substrate and the paste applicator relative to each other.

161. (Currently Amended) A method for producing a plasma display substrate comprising a base substrate having a plurality of display electrodes and a plurality of barrier ribs formed on a surface of the base substrate with a selected pitch, and phosphor layers formed over the display electrodes and in spaces between the barrier ribs, comprising:

(a) preparing

(a-1) a table mounted with the base substrate on an upper surface thereof,

(a-2) a paste applicator having a nozzle which includes (i) a flat plate having a flat surface provided with 150 to 2000 outlet holes for discharging a phosphor paste for emitting light of one color selected from the group consisting of red, green ~~or~~ and blue to form the phosphor layers and (ii) a manifold in which the phosphor paste is stored and which supplies the phosphor paste to the outlet holes, wherein the outlet holes have an average diameter of 10 to 500 $\mu$m, the outlet holes are formed with a pitch of 0.12 to 3 mm, and a lower surface of the flat plate is arranged to be located above and faces the upper surface of the table, and

(a-3) a moving device to move the table and the paste applicator relative to each other,

(b) moving the table and the paste applicator relative to each other with the moving device in a one time relative movement along the lengthwise direction of the barrier ribs,

(c) discharging the phosphor paste continuously from the manifold through the outlet holes, and

(d) applying the phosphor paste discharged from the outlet holes into all of the spaces to be coated with the phosphor paste for emitting light of the selected color between the barrier ribs extending across substantially the entire base substrate to form the phosphor layers therein in a single pass.

162. (Cancelled)

163. (Currently Amended) A method for producing a plasma display substrate comprising a base substrate having a plurality of display electrodes and a plurality of barrier ribs formed on a surface of the base substrate with a selected pitch, and phosphor layers formed over the display electrodes and in spaces between the barrier ribs, comprising:

(a) preparing

(a-1) a table mounted with the base substrate on an upper surface thereof,

(a-2) a paste applicator comprising a first nozzle, a second nozzle and a third nozzle, wherein

(a-2-1) the first nozzle includes (i) a first flat plate having a flat surface provided with a first set of 150 to 2000 outlet holes for discharging a first phosphor paste for emitting light of red to form the phosphor layers and (ii) a first manifold in which the first phosphor paste is stored and which supplies the first phosphor paste to the first set of outlet holes, wherein the first set of outlet holes have an average diameter of 10 to 500 $\mu$m, the first set of outlet holes are formed with a pitch of 0.12 to 3 mm and the first set of outlet holes are provided along a first straight line,

(a-2-2) the second nozzle includes (i) a second flat plate having a flat surface provided with a second set of 150 to 2000 outlet holes for discharging a second phosphor paste for emitting light of green to form the phosphor layers and (ii) a second manifold in which the second phosphor paste is stored and which supplies the second phosphor paste to the second set of outlet holes, wherein the second set of outlet holes have an average diameter of 10 to 500 $\mu$m, the second set of outlet holes are formed with a pitch of 0.12 to 3 mm and the second set of

outlet holes are provided along a second straight line parallel to the first straight line, and

(a-2-3) the third nozzle includes (i) a third flat plate having a flat ~~plate~~surface provided with a third set of 150 to 2000 outlet holes for discharging a third phosphor paste for emitting light of blue to form the phosphor layers and (ii) a third manifold in which the third phosphor paste is stored and which supplies the third phosphor paste to the third set of outlet holes, wherein the third set of outlet holes have an average diameter of 10 to 500 $\mu$m, the third set of outlet holes are formed with a pitch of 0.12 to 3 mm and the third set of outlet holes are provided along a third straight line parallel to the first straight line, and

(a-2-4) wherein lower surfaces of the first, second and third flat plates are arranged to be located above and face the upper surface of the table,

(a-3) a moving device to move the table and the paste applicator relative to each other,

(b) moving the table and the paste applicator with the moving device to effect a one time relative movement of each of the three sets of the outlet holes along a lengthwise direction of the barrier ribs,

(c) discharging the phosphor paste continuously and simultaneously from the first manifold through the first set of outlet holes, from the second manifold through the second set of outlet holes and from the third manifold through the third set of outlet holes, and

(d) applying the respective phosphor pastes discharged from the respective outlet holes into the respective spaces to be coated with the respective phosphor pastes for emitting light of the respective red, green and blue between the barrier ribs positioned across substantially the entire base substrate to form the respective phosphor layers therein in a single pass.

164. (Currently Amended) An apparatus for producing a plasma display substrate comprising a base substrate having a plurality of display electrodes and a plurality of barrier ribs formed on a surface of the base substrate with a selected pitch, and phosphor layers formed over the display electrodes and in spaces between the barrier ribs, the apparatus comprising:

(a) a table on an upper surface of which the base substrate can be mounted,

(b) a paste applicator comprising a nozzle having a manifold provided therein to store a phosphor paste for emitting light of one color selected from the group consisting of red, green ~~or~~and blue to form the phosphor layers and a plurality of outlet holes to discharge the phosphor paste from the manifold to the spaces to be coated with the phosphor paste for emitting light of the selected color between the barrier ribs positioned across substantially the entire base substrate mounted on the upper surface of the table, and

(c) a moving device that moves the table and the paste applicator relative to each other in a single pass,

wherein a bottom surface of the nozzle is formed with a flat plate having a flat surface, the outlet holes are formed in and through the flat plate, a number of the outlet holes formed in the flat plate is from 150 to 2000, an average diameter of the outlet holes is 10 to 500 $\mu$m, a pitch of the outlet holes is from 0.12 to 3 mm, and the bottom surface of the flat plate is located above and faces the upper surface of the table.